

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE,
REQUEST FOR FILING NATIONAL PHASE OF
PCT APPLICATION UNDER 35 U.S.C. 371 AND 37 CFR 1.494 OR 1.495

Hon. Commissioner of Patents
Washington, D.C. 20231



00909

TRANSMITTAL LETTER TO THE UNITED STATES

Atty Dkt: P 283699

/110002302US/
UDO/SUP

DESIGNATED/ELECTED OFFICE (DO/EO/US)

M#

/Client Ref.

From: Pillsbury Winthrop LLP, IP Group:

Date: September 17, 2001

This is a **REQUEST** for **FILING** a PCT/USA National Phase Application based on:

1. International Application	2. International Filing Date	3. Earliest Priority Date Claimed
PCT/SE00/00513	16/03/2000	16/03/1999
<u>↑ country code</u>	Day MONTH Year	Day MONTH Year (use item 2 if no earlier priority)

4. Measured from the earliest priority date in item 3, this PCT/USA National Phase Application Request is being filed within:

(a) ☐ 20 months from above item 3 date (b) ☒ 30 months from above item 3 date,(c) Therefore, the due date (unextendable) is September 16, 2001Title of Invention MOBILE STATION WITH A PLURALITY OF INTERFACES6. Inventor(s) Hans-Jorgen HENRIKSSON

Applicant herewith submits the following under 35 U.S.C. 371 to effect filing:

☒ Please immediately start national examination procedures (35 U.S.C. 371 (f)).☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2)) is transmitted herewith (file if in English but, if in foreign language, file only if not transmitted to PTO by the International Bureau) including:a. ☐ Request;b. ☐ Abstract;

c. 9 pgs. Spec. and Claims;

d. 1 sheet(s) Drawing which are ☒ informal ☐ formal of size ☒ A4 ☐ 11"9. ☒ A copy of the International Application has been transmitted by the International Bureau.

10. A translation of the International Application into English (35 U.S.C. 371(c)(2))

a. ☐ Is transmitted herewith including: (1) ☐ Request; (2) ☐ Abstract;

(3) _____ pgs. Spec. and Claims;

(4) _____ sheet(s) Drawing which are:

☐ informal ☐ formal of size ☐ A4 ☐ 11"b. ☐ Is not required, as the application was filed in English.c. ☐ Is not herewith, but will be filed when required by the forthcoming PTO Missing Requirements Notice per Rule 494(c) if box 4(a) is X'd or Rule 495(c) if box 4(b) is X'd.d. ☐ Translation verification attached (not required now).

RE: USA National Phase Filing of PCT /SE00/00513

11. ☒ Please see the attached Preliminary Amendment
12. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)), i.e., **before 18th month from first priority date above in item 3, are transmitted herewith (file only if in English) including:**
13. ☒ PCT Article 19 claim amendments (if any) have been transmitted by the International Bureau
14. ☐ Translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)), i.e., of **claim amendments** made before 18th month, **is attached (required by 20th month from the date in item 3 if box 4(a) above is X'd, or 30th month if box 4(b) is X'd, or else amendments will be considered canceled).**

15. **A declaration of the inventor** (35 U.S.C. 371(c)(4))
- a. ☐ is submitted herewith ☐ Original ☐ Facsimile/Copy
- b. ☒ is not herewith, but will be filed when required by the forthcoming PTO Missing Requirements Notice per Rule 494(c) if box 4(a) is X'd or Rule 495(c) if box 4(b) is X'd.

16. **An International Search Report (ISR):**
- a. Was prepared by ☐ European Patent Office ☐ Japanese Patent Office ☒ Other
- b. ☒ Has been transmitted by the international Bureau to PTO.
- c. ☒ Copy herewith (2 pg(s).) ☒ plus Annex of family members (1 pg(s).)

International Preliminary Examination Report (IPER):

- a. ☒ Has been transmitted (if this letter is filed after 28 months from date in item 3) in English by the International Bureau with Annexes (if any) in original language.
- b. ☒ Copy herewith in English.
- c.1 ☐ IPER Annex(es) in original language ("Annexes" are amendments made to claims/spec/drawings during Examination) including attached amended:
- c.2 ☐ Specification/claim pages # ___ claims #
Dwg Sheets #
- d. ☐ Translation of Annex(es) to IPER **(required by 30th month due date, or else annexed amendments will be considered canceled).**

Information Disclosure Statement including:

- a. ☒ Attached Form PTO-1449 listing documents
- b. ☒ Attached copies of documents listed on Form PTO-1449
- c. ☒ A concise explanation of relevance of ISR references is given in the ISR.

19. ☐ **Assignment** document and Cover Sheet for recording are attached. Please mail the recorded assignment document back to the person whose signature, name and address appear at the end of this letter.
20. ☐ Copy of Power to IA agent.
21. ☐ **Drawings** (complete only if 8d or 10a(4) not completed): ___ sheet(s) per set: ☐ 1 set informal; ☐ Formal of size ☐ A4 ☐ 11"

22. Small Entity Status ☒ is **Not** claimed ☐ is claimed (**pre-filing confirmation required**)
- 22(a) ___ (No.) Small Entity Statement(s) enclosed (since 9/8/00 Small Entity Statements(s) not essential to make claim)

23. **Priority** is hereby claimed under 35 U.S.C. 119/365 based on the priority claim and the certified copy, both filed in the International Application during the international stage based on the filing in (country) Sweden of:

Application No.		Filing Date	Application No.		Filing Date
(1)	9900954-0	March 16, 1999	(2)		
(3)			(4)		
(5)			(6)		

- a. ☒ See Form PCT/IB/304 sent to US/DO with copy of priority documents. If copy has not been received, please proceed promptly to obtain same from the IB.
- b. ☒ Copy of Form PCT/IB/304 attached.

RE: USA National Phase Filing of PCT/SE00/00513

24. Attached: PCT/IB/308 – Notice Informing the Applicant of the Communication of the International Application to the Designated Offices (2 pg)

25. Per Item 17.c.2, **cancel original** pages #__, claims #__, Drawing Sheets #

26. **Calculation of the U.S. National Fee (35 U.S.C. 371 (c)(1)) and other fees is as follows:**

Based on amended claim(s) per above item(s) ☐ 12, ☐ 14, ☐ 17, ☐ 25 (hilitte)

Total Effective Claims	22	minus 20 =	2	x \$18/\$9	=	\$36	966/967
Independent Claims	2	minus 3 =	0	x \$80/\$40	=	\$0	964/965
If any proper (ignore improper) Multiple Dependent claim is present,				add\$270/\$135	+	0	968/969

BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(4)): →→ **BASIC FEE REQUIRED, NOW** →→→→

A. If country code letters in item 1 are not "US", "BR", "BB", "TT", "MX", "IL", "NZ", "IN" or "ZA"

See item 16 re:

1. Search Report was <u>not</u> prepared by EPO or JPO -----	add\$1000/\$500		960/961
2. Search Report was prepared by EPO or JPO -----	add\$860/\$430	+1000	970/971

SKIP B, C, D AND E UNLESS country code letters in item 1 are "US", "BR", "BB", "TT", "MX", "IL", "NZ", "IN" or "ZA"

→ <input type="checkbox"/> B. If <u>USPTO</u> did not issue <u>both</u> International Search Report (ISR) <u>and</u> (if box 4(b) above is X'd) the International Examination Report (IPER), -----	add\$1000/\$500	+0	960/961
→ <input type="checkbox"/> C. If <u>USPTO</u> issued ISR but not IPER (or box 4(a) above is X'd), -----	add\$710/\$355	+0	958/959
→ <input type="checkbox"/> D. If <u>USPTO</u> issued IPER but IPER Sec. V boxes <u>not all</u> 3 YES, -----	add\$690/\$345	+0	956/957
→ <input type="checkbox"/> E. If international preliminary examination fee was paid to <u>USPTO</u> and Rules 492(a)(4) and 496(b) <u>satisfied</u> (IPER Sec. V <u>all</u> 3 boxes YES for <u>all</u> claims), -----	add \$100/\$50	+0	962/963

SUBTOTAL = \$1036

28. If Assignment box 19 above is X'd, add Assignment Recording fee of ----\$40 +0 (581)

29. If box 15a is x'd, determine whether inventorship on Declaration is different than in international stage. If yes, add (per Rule 497(d)) ----\$130 +0 (098)

30. Attached is a check to cover the ----- **TOTAL FEES \$1036**

Our Deposit Account No. 03-3975

Our Order No. 070051 | 0283699
C# M#



00909

CHARGE STATEMENT: The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any missing or insufficient fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 and 492 (missing or insufficient fee only) now or hereafter relative to this application and the resulting Official document under Rule 20, or credit any overpayment, to our Account/Order Nos. shown above for which purpose a duplicate copy of this sheet is attached.

This CHARGE STATEMENT does not authorize charge of the issue fee until/unless an issue fee transmittal form is filed

Pillsbury Winthrop LLP
Intellectual Property Group

By Atty: Paul T. Bowen Reg. No. 38009

Sig: [Signature] Fax: (703) 905-2500
Tel: (703) 905-2020

Atty/Sec: PTB/jck

NOTE: File in duplicate with 2 postcard receipts (PAT-103) & attachments.

09/936761

JC16 Rec'd PCT/PTO SEP 17 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION OF

Inventor(s): HENRIKSSON

Filed: Herewith

Title: MOBILE STATION WITH A PLURALITY OF INTERFACES

September 17, 2001

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents
Washington, D.C. 20231

Sir:

Please amend this application as follows:

IN THE SPECIFICATION:

At the top of the first page, just under the title, insert

☒ --This application is the National Phase of International Application
PCT/SE00/00513 filed March 16, 2000 which designated the U.S.
and that International Application

☒ was ☐ was not published under PCT Article 21(2) in English.—

See the attached Appendix for the changes made to effect the above paragraph.

IN THE CLAIMS:

Please amend claims 3-9, 11, 14-20, and 22 as follows:

3. (Amended) Method according to claim 1, characterized in that the CPU has an
interface to each external device and its application.

4. (Amended) Method according to claim 1, characterized in that one of the external devices (14) is a position-determining device for determining the position of the mobile station (10).

5. (Amended) Method according to claim 1, characterized in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

6. (Amended) Method according to claim 1, characterized in that one of the external devices is a navigation device for navigation of a vehicle or person.

7. (Amended) Method according to claim 1, characterized in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

8. (Amended) Method according to claim 1, characterized in that one of the external devices is a monitoring device for monitoring conditions.

9. (Amended) Method according to claim 1, characterized in that the external devices (14) are specific to the customer with customized applications program modules, whereby they have been determined by a user and programmed in during ordering of the mobile station, and whereby tailoring of the mobile station (10) is achieved according to the requirements of the user.

11. (Amended) Method according to claim 1, characterized in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

14. (Amended) Mobile station according to claim 12, characterized in that the CPU has an interface (18) to each external device (14) and its application.

15. (Amended) Mobile station according to claim 12, characterized in that one of the external devices is a position-determining device for determining the position of the mobile station.

16. (Amended) Mobile station according to claim 12, characterized in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

17. (Amended) Mobile station according to claim 12, characterized in that one of the external devices is a navigation device for navigation of a vehicle or person.

18. (Amended) Mobile station according to claim 12, characterized in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

19. (Amended) Mobile station according to claim 12, characterized in that one of the external devices is a monitoring device for monitoring conditions.

20. (Amended) Mobile station according to claim 12, characterized in that the external devices (14) are specific to the customer with customized applications program modules that are specific to the customer, whereby they have been determined by a user and programmed in during ordering of the mobile station (10), and whereby tailoring of the mobile station is achieved according to the requirements of the user.

22. (Amended) Mobile station according to claim 12, characterized in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

See the attached Appendix for the changes made to effect the above claims.

70051-283699-national stage transmittal.doc

REMARKS

The specification has been amended to indicate that this application is the National Phase of International Application PCT/SE00/00513 filed March 16, 2000.

In addition, claims 3-9, 11, 14-20 and 22 have been amended to eliminate multiple dependency.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

Prompt and favorable examination is respectfully requested.

Respectfully submitted,

PILLSBURY WINTHROP LLP
Intellectual Property Group

By: 

Paul T. Bowen
Registration No.: 38,009
Tel. No.: 703.905.2020
Fax No.: 703.905.2500

PTB/jck
Attachment:
Appendix

1600 Tysons Boulevard
McLean, VA 22102
(703) 905-2000

VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE SPECIFICATION:

At the top of the first page, just under the title, insert

☒ --This application is the National Phase of International Application
PCT/SE00/00513 filed March 16, 2000 which designated the U.S.

and that International Application

☒ was ☐ was not published under PCT Article 21(2) in English.—

IN THE CLAIMS:

Please amend claims 3-9, 11, 14-20, and 22 as follows:

3. (Amended) Method according to [claims] claim 1 [and 2], characterized in that the CPU has an interface to each external device and its application.

4. (Amended) Method according to [claims 1-3] claim 1, characterized in that one of the external devices (14) is a position-determining device for determining the position of the mobile station (10).

5. (Amended) Method according to [claims 1-4] claim 1, characterized in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

6. (Amended) Method according to [claims 1-5] claim 1, characterized in that one of the external devices is a navigation device for navigation of a vehicle or person.

7. (Amended) Method according to [claims 1-6] claim 1, characterized in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

8. (Amended) Method according to [claims 1-7] claim 1, characterized in that one of the external devices is a monitoring device for monitoring conditions.

9. (Amended) Method according to [any of the preceding claims] claim 1, characterized in that the external devices (14) are specific to the customer with customized applications program modules, whereby they have been determined by a user and programmed in during ordering of the mobile station, and whereby tailoring of the mobile station (10) is achieved according to the requirements of the user.

11. (Amended) Method according to [claims 1-10] claim 1, characterized in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

14. (Amended) Mobile station according to [claims] claim 12 [and 13], characterized in that the CPU has an interface (18) to each external device (14) and its application.

15. (Amended) Mobile station according to [claims 12-14] claim 12, characterized in that one of the external devices is a position-determining device for determining the position of the mobile station.

16. (Amended) Mobile station according to [claims 12-15] claim 12, characterized in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

17. (Amended) Mobile station according to [claims 12-16] claim 12, characterized in that one of the external devices is a navigation device for navigation of a vehicle or person.

18. (Amended) Mobile station according to [claims 12-17] claim 12, characterized in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

19. (Amended) Mobile station according to [claims 12-18] claim 12, characterized in that one of the external devices is a monitoring device for monitoring conditions.

20. (Amended) Mobile station according to [claims 12-19] claim 12, characterized in that the external devices (14) are specific to the customer with customized applications program modules that are specific to the customer, whereby they have been determined by a user and programmed in during ordering of the mobile station (10), and whereby tailoring of the mobile station is achieved according to the requirements of the user.

22. (Amended) Mobile station according to [claims 12-21] claim 12, characterized in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

Mobile station with a plurality of interfaces

Technical field

The present invention concerns a method for using the CPU-memory of a mobile station as interfaces for a plurality of applications that are external to the mobile station and for the mobile station *per se*.

Prior art

Practically everyone today owns a mobile telephone. As such telephones have become available for the general public more and more applications have been established for them. Among other things, they are used for determining the position of vehicles using GPS (Global Positioning System), navigation using the said positioning system, sending of measured values from, for example, an electrical meter to a central computer, generation of a personal alarm and alarm for the theft of vehicles, often in combination with GPS, and for other monitoring tasks, such as the reading of parameters for electrical equipment in, for example, domiciles, etc.

The problem with current mobile telephones when used for such external tasks is that the external equipment must be connected to the mobile telephone via an interface in the form of a microprocessor, which adapts input and output data to the radio section of the mobile telephone. This involves additional cost and is disadvantageous for the customer and the manufacturers of the external systems, who must adapt the mobile telephones to their specific systems, such as GPS.

It would be an advantage if the customers themselves could determine what their mobile telephones are to be used for, in addition to pure radio-telephony, when purchasing them. The customer may even desire to add external applications at a later date, or even remove existing applications. This is, however, not possible with current mobile telephones, which is why there exists a need to be able to introduce applications into mobile telephones without external interfaces for adaptation to the radio section of the telephone.

The German patent application DE-A1-44 21 508 specifies a system in which the SIM-card (Subscriber Identity Module Card) of a telephone, called in German "Chip-karte" with an IC-circuit that denotes the active components of the card, can be equipped with a digital-analogue converter. A SIM-card includes an IC-circuit with a processor, that is, it is an active card. The system according to DE-A1-44 21 508, has thus an extra processor interface between the CPU of the mobile telephone and the external application, which in this case is a system for requesting help for the driver and passengers in a car.

The British patent application GB-A-2 289 555 specifies a "notebook" computer with a memory unit that does not use the free memory in the CPU of the notebook. Part of the application and word processor programs of the notebook computer are stored in the memory unit. The notebook computer does not communicate externally with devices that lack an external processor as an interface, with the exception of devices that do not require their own processor, with applications software included in the CPU memory of a mobile station.

Summary of the invention

The present invention relates to a method and a mobile station for the use of the CPU memory of a mobile station as interface for a plurality of applications that are external to the mobile station according to the attached independent claims and further embodiments according to the attached dependent claims.

One intention of the present invention is to specify a mobile station that has been customized for communication with units that are external to the mobile station directly from the CPU, without using an external CPU as interface for the communication.

In particular, the invention specifies a method for using the CPU memory of a mobile station as interface for a plurality of applications that are external to the mobile station. Program modules for the said external applications are stored in that part of the CPU memory of the mobile station that is available after that the software that controls the conventional functions of the mobile station has been stored. The CPU of the mobile station thus performs those functions that connect external devices to the radio section of the mobile station and thus replaces a conventional external CPU as interface between external devices and the mobile station.

In one embodiment of the invention the input- and output ports of the mobile station are connected directly to the input- and output ports of the external device, via cable or in a wireless manner, whereby the mobile station is not continuously locked into an external device.

In another embodiment the CPU has an interface to each external device and its application.

A further embodiment of the invention includes the case in which one of the external devices is a position-determining device, for determining the position of the mobile station.

Another embodiment includes the case in which one of the external devices is a measuring device for measurement of at least one measurable parameter.

A further embodiment includes the case in which one of the external devices is a navigation device for navigation of a vehicle or person.

Furthermore, the invention in one embodiment includes the case in which one of the external organs is an alarm for generating an alarm concerning a condition that requires an alarm.

5 A further embodiment includes the case in which one of the external devices is a monitoring device for, for example, machines or a machine park.

A further embodiment includes the case in which the external organs are customized with customized applications program modules, whereby they have been determined by the user of a mobile telephone and programmed in during ordering of the mobile station, and whereby tailoring of the mobile station is achieved according to the needs of the customer.

10 Furthermore, the applications program modules of the external devices can be erased and replaced by new applications program modules that are specific for the customer by reprogramming of free modules in an embodiment of the invention.

Furthermore, the present invention specifies a mobile station with its own CPU memory as interface to a plurality of applications that are external to the mobile station. The mobile station in this case includes:

program modules in the CPU memory for the said external applications, which are stored in that part of the CPU memory of the mobile station that is available after that the software that controls the conventional functions of the mobile station has been stored; and

20 that the CPU performs those functions that connect external devices to the radio section of the mobile station and thus replaces a conventional external CPU as interface between external devices and the mobile station.

Further, the mobile station can, according to the present invention, perform those embodiments that are specified in the method described above.

Brief description of the drawing

25 Henceforth reference is had to the attached drawings and the explanatory text in order to obtain a better understanding of the invention and its embodiments, whereby:

Fig. 1 illustrates schematically an embodiment of previously known technology concerning an example using GPS positioning; and

30 Fig. 2 illustrates schematically an embodiment according to the present invention with the example shown in Fig. 1.

Preferred embodiments of the described invention

The invention according to the present description is intended to solve the problems related to interfaces for the use of external devices, such as GPS devices, alarm devices, monitoring devices, measurement devices, etc., that make use of a mobile telephone in order

to send messages to a central or similar. A previously known system is illustrated in Fig. 1 for the positioning of, for example, a vehicle, animal or person. Fig. 1 illustrates schematically an embodiment of previously known technology concerning an example using GPS positioning. The system consists of a mobile station (MS) 10 that sends messages concerning the position of the bearer of the system using position information that is obtained through a GPS satellite receiver 14 with a receiving aerial 16.

In order to be able to use the mobile station 10 for radio messages, via, for example, GSM, about the position of a bearer of the same, the GPS receiver must have an interface in the form of a microprocessor 12 to the radio section of the MS 10, so that data from GPS are correctly transmitted over GSM.

Fig. 2 illustrates schematically an embodiment according to the present invention of the GSM example shown in Fig. 1.

With reference to Fig. 2 according to the present invention, the problem concerning an extra microprocessor 12 between an external device 14 and the MS 10 is solved using the insight that the CPU (Central Processor Unit) of MS 10 should be most suitable to be used as interface between external devices 14 and the radio section 20 of MS 10. The problem is solved by using the internal memory of about 1 MB of the CPU, approximately 700 KB of which are used for the telephony and/or data part of MS 10. The invention in itself is not limited concerning the size of the memory.

Most external applications according to the above require around 50 KB of memory in order to be able to serve as applications program modules, that is, computer programs that function as interfaces between the radio section 20 of MS 10 and external devices 14.

In theory, 300 KB provides space for six applications program modules.

During manufacture of MS 10 according to the present invention, an IC circuit 18 from, for example, the company Commquest® be used. The circuit consists of a number of modules, in this case six, whereby one module provides a CPU that can be programmed for mobile telephony. Further, one module provides an I/O interface for communication with the surroundings of MS 10. A further applications program module denoted VOC (Voice Coder) provides the voice coder of the mobile telephone. One module is denoted A/D and provides an analogue/digital converter.

Fig. 2 also shows two extra modules without description, which can be used as applications program modules for external devices. The one module here is, schematically shown, connected to the radio part 20 of MS 10 in order to report the position of MS 10 to a central.

According to the present invention, the problem concerning an extra microprocessor 12 between the radio section 20 of MS 10 and external devices 14 is solved such that the input- and output ports of the mobile station can be connected directly to the input- and output ports (not shown) of the device 14. In the same way can the CPU of MS 10 have an interface to each external device and its application as long as available memory capacity in MS 10 allows this.

Furthermore, certain preferred embodiments of the present invention consist of that one of the external devices is a position-determining device 14 in order to determine the position of the mobile station 10, measurement devices for measurement of at least one measurable parameter, navigation devices for the navigation of a vehicle or a person, alarms for generating an alarm concerning a condition that requires an alarm, monitoring devices for monitoring, etc. For example, the measuring device may consist of a reader of the electricity consumption of a domicile, whereby MS 10 transmits the reading to an electrical distributor. The alarm may be an intrusion alarm with motion detector that transmits via MS 10 to an alarm central, for example, the police, in the event of an intrusion. The monitoring device may, for example, monitor the functioning of a machine or machine park in order to send messages concerning the settings of various parameters of these, and for further transmission of the parameters to a operations centre via MS 10. According to the same method, the navigation device can be used in order to specify the course information of a vehicle on a display.

The present invention is not in any way limited by the specified applications, rather a plurality of other applications that require transmission by MS 10 are possible.

The external devices 14 have hereby been achieved as specific for a customer, with customized applications, whereby they have preferably been determined and ordered by a user of MS 10, and thus programmed in during ordering of the mobile station. Tailoring of MS 10 has in this way been achieved according to the needs of the user. The applications of the external devices can even be deleted in the CPU, and replaced by new customer-specific applications program modules by programming of the available or deleted [space].

The mobile station MS 10 according to the present invention with its own CPU memory as interface 18 for a plurality of applications that are external to the mobile station includes in addition to telephony and/or computer functions that are customary for MS 10 also:

Application program modules 18 in the CPU memory for the said external applications, which are stored in that part of the CPU memory of the mobile station that is

available after that the software that controls the conventional functions of the mobile stations has been stored; and

that the CPU performs those function that connect external devices 14 to the radio section 20 of the mobile station, and thus replaces the conventional external CPU 12 as interface 18 between the external device 14 and the mobile station 10.

The CPU in one embodiment is an IC circuit 18 that includes a fixed number of modules for external applications.

The invention also allows that the mobile telephone is connected by wire or in a wireless manner via interface 18 to different external devices as required for measurement, alarm, monitoring, navigation, positioning, etc., depending on the applications program modules, which means that MS 10 does not need to be continuously locked to one external device. In this way, the area of application of MS 10 becomes very versatile and flexible. As previously discussed, a user can then use MS 10 as a mobile telephone, electrical meter reader, navigation aid, etc., without locking its use.

The present invention has been described by the use of preferred embodiments and examples, but is not limited to these because of this. It is rather the attached claims that specify further embodiments for one skilled in this technical field.

Claims

1. Method for using the CPU memory of a mobile station (10) as interface (18) for a plurality of applications (14) that are external to the mobile station (10).

characterized in that applications program modules for the said external

5 applications (14) are stored in that part of the CPU memory of a mobile station that is available after that the software that controls the conventional functions of the mobile station has been stored, whereby the CPU of the mobile station performs those functions that connect external devices (14) to the radio section (20) of the mobile station (10) and in this way replaces a conventional external CPU (12) as interface (18) between external devices (14) and
10 the mobile station (10).

2. Method according to claim 1, characterized in that the input- and output (I/O) ports of the mobile station (10) are connected directly to the input- and output ports of the external device (14) by cables or in a wireless manner, whereby the mobile station (10) is not continuously locked to an external device (14).

15 3. Method according to claims 1 and 2, characterized in that the CPU has an interface to each external device and its application.

4. Method according to claims 1-3, characterized in that one of the external devices (14) is a position-determining device for determining the position of the mobile station (10).

20 5. Method according to claims 1-4, characterized in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

6. Method according to claims 1-5, characterized in that one of the external devices is a navigation device for navigation of a vehicle or person.

25 7. Method according to claims 1-6, characterized in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

8. Method according to claims 1-7, characterized in that one of the external devices is a monitoring device for monitoring conditions.

9. Method according to any of the preceding claims, characterized in that the external devices (14) are specific to the customer with customized applications program
30 modules, whereby they have been determined by a user and programmed in during ordering of the mobile station, and whereby tailoring of the mobile station (10) is achieved according to the requirements of the user.

10. Method according to claim 9, characterized in that the applications program modules of the external devices (14) can be erased and replaced by new applications

program modules specific for the customer by reprogramming free modules.

11. Method according to claims 1-10, c h a r a c t e r i z e d in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.

12. Mobile station (10) with its own CPU memory as interface (18) to a plurality of applications that are external to the mobile station (10), c h a r a c t e r i z e d in that it includes:

applications program modules in the CPU memory for the said external applications, which are stored in that part of the CPU memory of the mobile station that is available after that the software that controls the conventional functions of the mobile station (10) has been stored; and

that the CPU performs those functions that connect external devices (14) to the radio section (20) of the mobile station (10) and in this way replaces a conventional external CPU (12) as interface (18) between external devices (14) and the mobile station (10).

13. Mobile station according to claim 12, c h a r a c t e r i z e d in that the input- and output (I/O) ports of the mobile station (10) are connected directly to the input- and output ports of the external device (14) by cables or in a wireless manner, whereby the mobile station (10) is not continuously locked to an external device (14).

14. Mobile station according to claims 12 and 13, c h a r a c t e r i z e d in that the CPU has an interface (18) to each external device (14) and its application.

15. Mobile station according to claims 12-14, c h a r a c t e r i z e d in that one of the external devices is a position-determining device for determining the position of the mobile station.

16. Mobile station according to claims 12-15, c h a r a c t e r i z e d in that one of the external devices is a measurement device for measurement of at least one measurable parameter.

17. Mobile station according to claims 12-16, c h a r a c t e r i z e d in that one of the external devices is a navigation device for navigation of a vehicle or person.

18. Mobile station according to claims 12-17, c h a r a c t e r i z e d in that one of the external devices is an alarm for generating an alarm in a situation that requires an alarm.

19. Mobile station according to claims 12-18, c h a r a c t e r i z e d in that one of the external devices is a monitoring device for monitoring conditions.

20. Mobile station according to claims 12-19, c h a r a c t e r i z e d in that the external devices (14) are specific to the customer with customized applications program modules that are specific to the customer, whereby they have been determined by a user and

programmed in during ordering of the mobile station (10), and whereby tailoring of the mobile station is achieved according to the requirements of the user.

21. Mobile station according to claim 20, characterized in that the applications program modules of the external devices (14) can be deleted and replaced by new applications program modules specific for the customer by reprogramming free modules.

22. Mobile station according to claims 12-21, characterized in that the CPU is an IC circuit (18) that includes a fixed number of modules for external applications.



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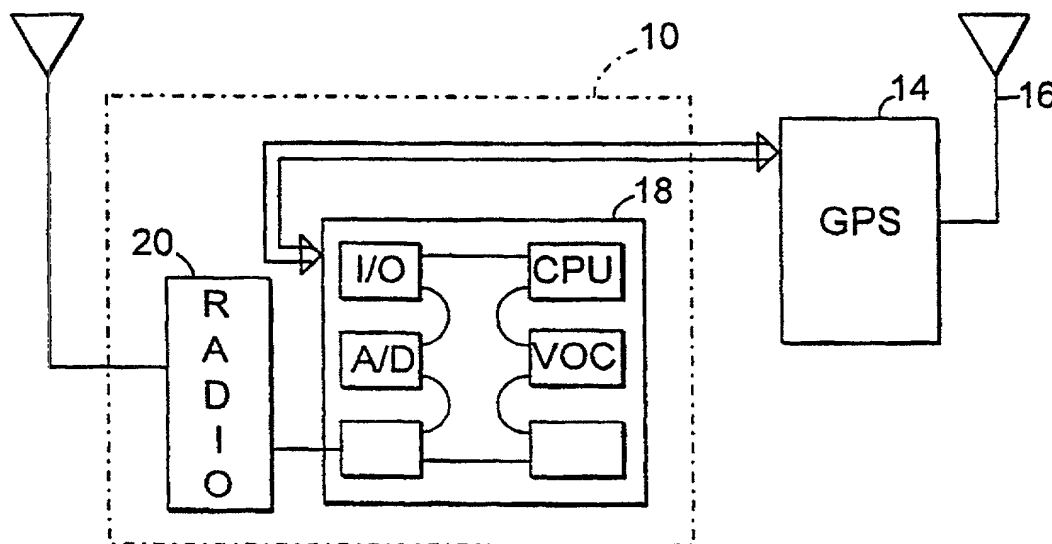
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(57) Abstract

The invention relates to a method and a mobile station (10), in which the CPU memory of the mobile station provides interfaces (18) for a plurality of applications that are external to the mobile station (10). Applications program modules for the said external applications are stored in that part of the CPU memory of a mobile station which is available after that the software that controls the conventional functions of the mobile station (10) has been stored. The CPU of the mobile station thereafter performs the functions that connect external devices (14) to the radio part (20) of the mobile station and in this way replaces a conventional external CPU (12) as interface between external devices (14) and the mobile station (10).

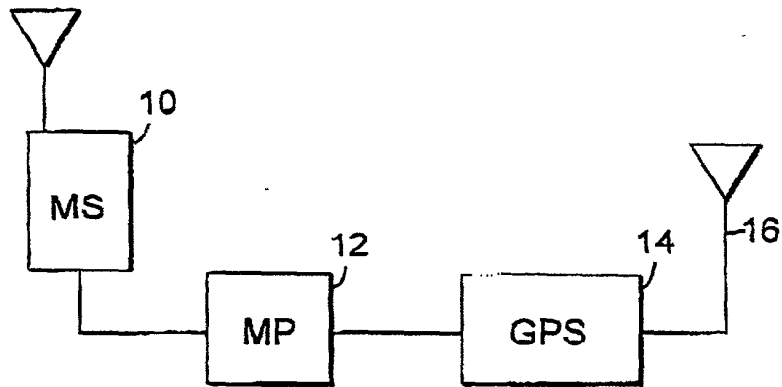


FIG.1

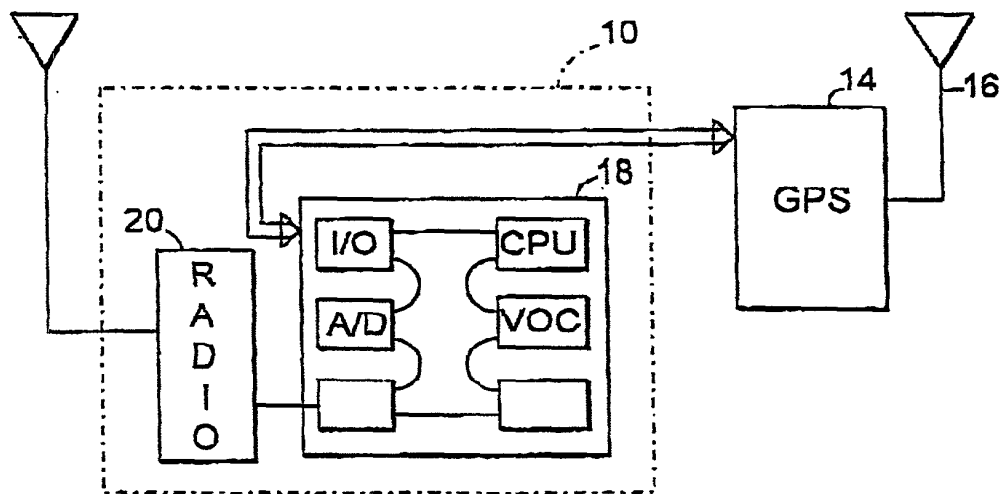


FIG.2

CIP/PCT NATIONAL/PLANT
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DECLARATIONSDECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

FORM

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the original matter which is claimed and for which a patent is sought on the INVENTION ENTITLED

MOBILE STATION WITH A PLURALITY OF INTERFACES

The specification of which (CHECK applicable BOX(ES))

A. ☒ is attached hereto.B. ☒ was filed on September 17, 2001 as U.S. Application No. 09/005915 on March 18, 2000C. ☒ was filed as PCT International Application No. PCT/ SE00/005915 on March 18, 2000

and, if applicable to U.S. or PCT application, was amended on 15/03/2000. I declare under oath that I have examined and understand the contents of the above identified specification, including the claims, as amended by any amendments referred to above. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 35 U.S.C. 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

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If more prior foreign applications, X box of Section and continue on attached page.

Except as noted below, I hereby claim domestic priority benefit under 35 U.S.C. 119(e) or 120 and/or 35(e) of the indicated United States applications listed below and PCT international applications listed above or below and, if applicable, under the subject matter disclosed and claimed in this application is in addition to those disclosed in such prior applications. I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 35 U.S.C. 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

PRIOR U.S. PROVISIONAL, NONPROVISIONAL AND/OR PCT APPLICATION(S)

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PCT/SE00/00513Day/MONTH/Year Filed
15/03/2000Status
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Priority NOT Claimed

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

And I hereby appoint Pillsbury Winthrop LLP, Intellectual Property Group, telephone number (703) 905-2000 (to whom all communications are to be directed), and persons of that firm who are associated with USPTO Customer No. 548 (see below) individually and collectively my attorneys in prosecution of this application and to conduct all business in the Patent and Trademark Office connected therewith, and with the resulting patent, and I hereby authorize them to execute from that Customer No. names of persons no longer with their firm, to add new persons to that Customer No., and to act and rely on instructions from and communications directly with the person(s) designated as my attorney(s) in this application who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct the above firm to change an attorney of that firm in writing to the contrary.

USE ONLY FOR
WILLSBURY WINTHROP

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(include Zip Code)			

☐ FOR ADDITIONAL INVENTORS see attached page.☐ See additional foreign priorities on attached page (incorporated herein by reference).ATTY. LKL NO. F0233589
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